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AIR POLLUTION CONTROL

ACTIVE RESEARCH GRANTS FOR FISCAL YEAR 1970

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U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
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AIR POLLUTION CONTROL ACTIVE RESEARCH GRANTS FOR FISCAL YEAR 1970

OFFICE OF RESEARCH GRANTS
RESEARCH TRIANGLE PARK, N. C.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Environmental Health Service
National Air Pollution Control Administration
Raleigh, North Carolina
September 1970

The APTD series of reports is issued by the National Air Pollution Control Administration to report technical data of interest to a limited readership. [redacted]

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National Air Pollution Control Administration Publication No. APTD-0582

FOREWORD

Under the authority of the Clean Air Act, the National Air Pollution Control Administration, Office of Research Grants, promotes and administers a research grants program with universities and other nonprofit organizations on the causes, effects, extent, prevention, and control of air pollution with respect to human health, welfare, and productivity. The purpose of this program is to promote and encourage research and development of new concepts, methods, and equipment for the establishment of air pollution standards and more effective air pollution control.

During fiscal year 1970, grants were awarded in eight major areas: human health effects, agricultural effects, socio-economic and political studies, physico-chemical investigations, development of analytic methods and equipment, meteorology, air pollution source control, and communications.

The grants listed herein represent those grants active during fiscal year 1970. In instances where no support is shown, these are grants already being supported which, for one reason or another, did not require that funds be awarded during this fiscal year. In some cases, the reader will note that project ending dates may have occurred prior to the end of the fiscal year; however, these grants are listed since they were active during the reporting period.

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AIR POLLUTION CONTROL ACTIVE RESEARCH GRANTS FOR FISCAL YEAR 1970

Table 1. SUMMARY OF ACTIVE RESEARCH GRANTS IN FISCAL YEAR 1970

Research category	Number of grants	Amount
A. Air Pollution Effects on Human Health, Welfare, or Productivity	35	$1,106,476
B. Agricultural Effects of Air Pollution	35	939,974
C. Economic and Social Studies and Regional Planning	11	70,105
D. Physico-Chemical Investigations	73	1,835,846
E. Development of Analytic Methods and Equipment	34	572,003
F. Meteorology	26	655,084
G. Description and Control of Air Pollution Sources	58	1,552,401
H. Communication	8	411,242
TOTALS	280	$7,143,131

Table 2. DISTRIBUTION OF RESEARCH GRANTS WITHIN RESEARCH CATEGORIES IN FISCAL YEAR 1970

Total grants - 280	Total Funds - $7,143,131		
	Number of grants	Amount	Percent of total funds
A. Air Pollution Effects on Human Health, Welfare, or Productivity	35	$1,106,476	15.5
1. Epidemiological and Statistical Studies	1	22,958	0.3
2. Broncho-Pulmonary Physiology and Pathology	8	248,573	3.5
3. Broncho-Pulmonary Diseases	6	303,604	4.3
4. Aeroallergens	4	66,796	0.9
5. Physiologic Effects of Specific Air Pollutants	16	464,545	6.5
B. Agricultural Effects of Air Pollution	35	939,974	13.1
1. On Plants	24	714,494	10.0
2. On Microorganisms, Plant Cells and Tissues	10	217,832	3.0
3. Plant related - emissions, pollen, sinks for pollutants, etc.	1	7,648	0.1
C. Economic and Social Studies and Regional Planning	11	70,105	1.0
1. Economic Studies	4	756	0.0
2. Economic Effects	3	27,921	0.4
3. Social Studies and Urban and Regional Planning	4	41,428	0.6
D. Physico-Chemical Investigations	73	1,835,846	25.7
1. On Gases	47	1,345,471	18.8
2. On Aerosols and Particulates	22	398,570	5.6
3. On Metals	4	91,805	1.3

Table 2 (Continued). DISTRIBUTION OF RESEARCH GRANTS WITHIN RESEARCH CATEGORIES IN FISCAL YEAR 1970

	Number of grants	Amount	Percent of total funds
E. Development of Analytic Methods and Equipment	34	572,003	8.0
1. For Gases	21	361,580	5.1
2. For Aerosols and Particulates	7	144,849	2.0
3. For Metals	6	65,574	0.9
F. Meteorology	26	655,084	9.2
1. Basic Studies	18	464,746	6.6
2. Air Pollution Forecasting	2	-	-
3. Biometeorology	6	190,338	2.6
G. Description and Control of Air Pollution Sources	58	1,552,401	21.7
1. Combustion	13	353,762	4.9
2. Vehicle Emissions	14	591,284	8.3
3. Industrial Emissions	8	107,015	1.5
4. Development of Control Principles and Devices	23	500,340	7.0
H. Communication	8	411,242	5.8
TOTALS	280	$7,143,131	100.0

A. AIR POLLUTION EFFECTS ON HUMAN HEALTH, WELFARE, OR PRODUCTIVITY

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
1. Epidemiological and Statistical Studies			
AP 01100-01	Robert M. Albrecht Columbia University New York, New York 10027 "Air Pollution and Emergency Room Visits"	4/1/70 - 8/31/72	$22,958
2. Broncho-Pulmonary Physiology and Pathology			
AP 00212-07	Lars T. Friberg Karolinska Institutet Stockholm, Sweden "Effect of Air Pollutants on Lung Clearance"	12/1/67 - 3/31/70	None*
AP 00229-08	Jere Mead Harvard University Boston, Massachusetts 02115 "Mechanical Factors in the Control of Breathing"	9/1/65 - 8/31/70	51,981
AP 00321-10	John J. Ballenger Evanston Hospital Association Evanston, Illinois 60201 "Effect of Noxious Agents on Ciliated Epithelium"	1/1/67 - 12/31/70	None*
AP 00424-04S1	Donald F. Proctor Johns Hopkins University Baltimore, Maryland 21205 "Physiology and Pathology of the Airways and Air Hygiene"	12/1/65 - 2/28/70	1,831
AP 00463-03S3	Arend Bouhuys John B. Pierce Foundation of Connecticut, Inc. New Haven, Connecticut 06519 "Physiological Studies on Air Pollution"	5/1/66 - 10/31/70	85,482

*Supported by FY 1969 funds.

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Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00607-03	Russell P. Sherwin University of Southern California Los Angeles, California 90007 "Pseudomonas in Tissue Cultures in Guinea Pig Lungs"	9/1/69 - 8/31/72	$35,241
AP 00608-04	T. Timothy Crocker University of California San Francisco, California 94122 "Air Pollutants on Respiratory Mucosa in Organ Culture"	6/1/70 - 5/31/73	54,822
AP 01069-01	Mauricio J. Dulfano Veterans Administration Hospital Brooklyn, New York 11209 "A Model of Mucociliary Function and Viscoelasticity"	4/1/70 - 3/31/72	19,216

3. Broncho-Pulmonary Diseases

AP 00484-05	Robert E. Snell Hospital for Sick Children Washington, D. C. 20017 "Atmospheric Pollution and Respiratory Diseases"	6/1/69 - 5/31/72	148,371
AP 00549-04	Quentin N. Myrvik Bowman Gray School of Medicine, Wake Forest Winston-Salem, North Carolina 27103 "Air Pollution and Respiratory Infections"	2/1/67 - 1/31/72	22,457
AP 00838-02	Stephen M. Ayres St. Vincent's Hospital and Medical Center New York, New York 10011 "Chronic Lung Disease Response to Pollution Free Air"	5/1/69 - 4/30/72	26,152
AP 00923-01A1	James McCarroll University of Washington Seattle, Washington 98105 "Air Pollution Effects on Airborne Respiratory Disease"	4/1/70 - 3/31/73	40,634

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 01106-01	Edward W. Swenson University of Florida Gainesville, Florida 32601 "SO_2 Vs Cigarette Smoke in Experimental Bronchitis"	5/1/70 - 4/30/72	$43,837
AP 01239-01	Elliot Goldstein University of California Davis, California 95616 "Effect of Air Pollutants on Pulmonary Bacterial Defense"	6/1/70 - 5/31/72	22,153
4. Aeroallergens			
AP 00001-15S1	Kenneth P. Mathews University of Michigan Ann Arbor, Michigan 48104 "Atmospheric Pollution by Aeroallergens: Medical Phase"	3/1/65 - 11/30/70	22,793
AP 00090-10S1	Donald W. Cowan University of Minnesota Minneapolis, Minnesota 55455 "Relationship of Air Pollution to Allergic Diseases"	1/1/66 - 12/31/69	None*
AP 00955-01	Thomas J. McDevitt Idaho State University Pocatello, Idaho 83201 "Allergic Evaluation of Industrial Emissions"	5/1/69 - 10/31/70	None*
AP 01135-01	Darrell J. Weber Brigham Young University Provo, Utah 84601 "Characterization of Unknown Lipids in Fungal Spores"	5/1/70 - 4/30/72	44,003
5. Physiologic Effects of Specific Air Pollutants			
AP 00002-11	Albert P. Krueger University of California Berkeley, California 94720 "Biological Effects of Gaseous Ions"	9/1/67 - 8/31/70	75,787

*Supported by FY 1969 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00045-10	H. David Kerr University of Maryland Baltimore, Maryland 21201 "Environmental Factors and Chronic Bronchitis"	2/1/70 - 1/31/71	$86,412
AP 00084-15	Mary O. Amdur Harvard University Boston, Massachusetts 02115 "Physiological Response to Atmospheric Pollutants"	9/1/69 - 8/31/74	67,091
AP 00260-08	Roger P. Smith Dartmouth College Hanover, New Hampshire 03755 "Sulfide Poisoning and Methemoglobinemia"	12/1/65 - 11/30/70	7,666
AP 00545-02S1	Dean C. Fletcher University of Nevada Reno, Nevada 89507 "The Toxicity of Terpenes as Air Pollutants"	2/1/67 - 5/31/70	None*
AP 00563-02	J. Percy Baumberger Palo Alto Medical Research Foundation Palo Alto, California 94302 "Air Pollutants and Respiratory Properties of Blood"	2/1/67 - 8/31/69	None**
AP 00653-02S1	Heriberto V. Thomas California State Department of Public Health Berkeley, California 94704 "Sputum Histamine and Inhalation Toxicity"	6/1/68 - 5/31/70	3,660
AP 00655-02	Peter K. Mueller California State Department of Public Health Berkeley, California 94704 "Respiratory Uptake of Gaseous Air Pollutants"	1/1/68 - 12/31/70	None*
AP 00726-02	James M. Ramsey University of Dayton Dayton, Ohio 45409 "Nervous Function in Hypoxic Patients Exposed to CO"	6/1/68 - 11/30/70	10,032

*Supported by FY 1969 funds.
**Supported by FY 1968 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00774-02	Russell P. Sherwin University of Southern California Los Angeles, California 90033 "A Biologic Indicator for Air Pollution"	5/1/69 - 4/30/71	$17,359
AP 00788-02	Alvin Felmeister Rutgers, The State University New Brunswick, New Jersey 08903 "Study of Irradiated Air Pollutants on Spread Films"	12/1/68 - 11/30/71	22,558
AP 00872-01	James L. Wolfe Mississippi State University State College, Mississippi 39762 "Effects of Auto Exhaust on Roadside Mammals"	6/1/70 - 11/30/71	9,427
AP 00960-01	Frank A. Vingiello Northeast Louisiana State University Monroe, Louisiana 71201 "Polycyclic Aromatic Hydrocarbons"	10/1/68 - 3/31/70	None*
AP 01014-01	Matilda S. McIntire University of Nebraska Omaha, Nebraska 68105 "Air Lead Pollution: Effect on the G-6-PD Deficient Negro"	9/1/69 - 8/31/71	50,008
AP 01075-01A1	Clayton G. Loosli University of Southern California Los Angeles, California 90033 "Respiratory Tract Air Pollutants and Biological Agents"	4/1/70 - 3/31/73	58,686
AP 01153-01	Frances L. Estes Gulf South Research Institute Baton Rouge, Louisiana 70801 "Biochemical Effects of Simulated Air Pollutants"	8/1/69 - 12/31/70	55,859

*Supported by FY 1969 funds.

B. AGRICULTURAL EFFECTS OF AIR POLLUTION

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
1. On Plants			
AP 00040-08	W. M. Dugger, Jr. University of California Riverside, California 92502 "Photochemical Effects of Oxidants on Plants"	9/1/64 - 3/31/71	None*
AP 00189-09	Leonard H. Weinstein Boyce-Thompson Institute for Plant Research Yonkers, New York 10701 "Effects of Air Pollutants or Plant Systems"	5/1/67 - 4/30/73	110,863
AP 00270-07	C. Ray Thompson University of California Riverside, California 92502 "The Total Effect of Air Pollutants on Bearing Citrus"	1/1/70 - 12/31/70	59,569**
AP 00272-06	Ellis F. Darley University of California Riverside, California 92502 "Effects of Dusts on Vegetation"	9/1/67 - 8/31/70	39,383
AP 00276-06S1	Gene W. Miller Utah State University Logan, Utah 84321 "HF-Air Pollution and Intermediary Metabolism"	9/1/66 - 8/31/69	1,166
AP 00341-07	Merrill R. Pack Washington State University Pullman, Washington 99163 "Response of Plant Fruiting to HF Fumigation"	6/1/69 - 5/31/72	24,232

*Supported by FY 1969 funds.
**Includes "06S1" supplement - $11,050.

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Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00393-06	Saul Rich Connecticut Agricultural Experiment Station New Haven, Connecticut 06504 "Nature and Control of Ozone Injury to Plants"	6/1/68 - 5/31/71	$17,930
AP 00436-04	Francis A. Wood Pennsylvania State University University Park, Pennsylvania 16802 "Air Pollution Effects"	9/1/69 - 8/31/71	30,295
AP 00452-05	A. Clyde Hill University of Utah Salt Lake City, Utah 84112 "Effect of Air Pollutants on Plant Growth"	10/1/65 - 9/30/70	50,817
AP 00544-04	Chester D. Leonard University of Florida Gainesville, Florida 32601 "Effects of Air-borne Fluorides on Citrus"	2/1/67 - 1/31/72	56,776
AP 00613-02S1	Jack Altman Colorado State University Fort Collins, Colorado 80521 "Effect of Air Pollution Damage to Plants in Colorado"	6/1/67 - 8/31/70	None*
AP 00630-03	Robert L. Barnes Duke University Durham, North Carolina 27706 "Biochemistry of Ozone Injury to Pines"	3/1/68 - 2/28/71	22,406
AP 00631-03	Michael Treshow University of Utah Salt Lake City, Utah 84112 "Impact of Air Pollutants on Ecosystems"	3/1/68 - 2/29/72	28,720**
AP 00686-02	George R. Hoffman University of South Dakota Vermillion, South Dakota 57069 "The Effects of Atmospheric Pollution on Epiphytes"	6/1/68 - 8/31/71	11,289

*Supported by FY 1969 funds.
**Includes "02S1" supplement - $4,750.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00701-03	Henry D. Gerhold Pennsylvania State University University Park, Pennsylvania 16802 "Breeding Trees Resistant to Air Pollutants"	6/1/68 - 5/31/72	$31,330
AP 00733-03	Eugene L. Sharp Montana State University Bozeman, Montana 59715 "Atmospheric Ions and the Infection Process of Fungi"	6/1/68 - 5/31/71	13,698
AP 00761-01	Eileen G. Brennan Rutgers, The State University New Brunswick, New Jersey 08903 "Factors in Response of Austrian Pine to Air Pollution"	6/1/70 - 5/31/72	12,716
AP 00874-02	Clarence C. Gordon University of Montana Missoula, Montana 59801 "A Study of Plants Growing in Polluted Atmospheres"	5/1/69 - 4/30/71	36,536
AP 01051-01	Merrill R. Pack Washington State University Pullman, Washington 99163 "Effects of Fluoride on Phosphorus Metabolism of Plants"	5/1/70 - 4/30/72	22,289
AP 01148-01	Albert List, Jr. Drexel University Philadelphia, Pennsylvania 19104 "Plant Growth Responses to Air Pollutants"	5/1/70 - 4/30/73	60,489
AP 01152-01	Gene W. Miller Western Washington State College Bellingham, Washington 98225 "HF - Air Pollution and Intermediary Metabolism"	9/1/69 - 10/31/70	44,920

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 01157-01	Ernest A. Ball University of California Irvine, California 92664 "Variable Toxic Response as a Means of Obtaining Smog-Resistant Plants"	6/1/70 - 11/30/71	$ 9,969
AP 01170-01	Thomas H. Nash, III Rutgers, The State University New Brunswick, New Jersey 08903 "Effects of Air Pollution on a Forest Ecosystem"	4/1/70 - 9/30/71	8,501
AP 01265-01	Douglas P. Ormrod University of Guelph Guelph, Ontario, Canada "Environment - Air Pollution Interactions on Plants"	5/1/70 - 4/30/73	20,600
2. On Micro-organisms, Plant Cells, and Tissues			
AP 00071-08	John B. Mudd University of California Riverside, California 92502 "Biochemical Effects of Air Pollutant Oxidants"	9/1/68 - 8/31/71	31,178
AP 00132-10	George P. Hanson California Arboretum Foundation, Inc. Arcadia, California 91006 "Effect of Air Pollutants on Tissue Growth of Plants"	4/1/68 - 12/31/69	None*
AP 00213-08	Lawrence Ordin University of California Riverside, California 92502 "Effect of Air Pollutants on Cell Growth"	12/1/68 - 11/30/71	33,873

*Supported by FY 1968 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00356-03S1	William W. Thomson University of California Riverside, California 92502 "Effects of Air Pollutants on Plant Cell Structure"	5/1/66 - 8/31/69	None*
AP 00586-03	Aly H. Mohamed University of Missouri Kansas City, Missouri 64110 "Cytogenetic Effects of Hydrogen Fluoride on Corn"	6/1/67 - 8/31/70	21,642
AP 00650-03	Leroy H. Wullstein University of Utah Salt Lake City, Utah 84112 "Nitrogen Pollutants and Their Fate in the Ecosystem"	9/1/67 - 11/30/70	26,750
AP 00699-03	Mendel Mazelis University of California Davis, California 95616 "Effect of SO_2 on Metabolic Pathways in Higher Plants"	3/1/68 - 6/31/71	12,848
AP 00729-02	Guenther Stotzky New York University New York, New York 10003 "Effect of Air Pollution Microbes in Vivo and in Vitro"	5/1/70 - 4/30/75	62,951
AP 00797-02	Craig R. Hibben Brooklyn Botanic Garden Brooklyn, New York 10562 "Air Pollution Effects on Powdery Mildew Fungi"	2/1/69 - 1/31/72	7,993
AP 01095-01	John P. Rier, Jr. Rutgers, The State University New Brunswick, New Jersey 08903 "Ozone and Vascular Tissue Differentiation in Plants"	5/1/70 - 4/30/73	20,597

3. Plant-Related—Emissions, Pollen, Sinks for Pollutants, etc.

AP 00736-03	James W. Hanover Michigan State University East Lansing, Michigan 48823 "Essential Oils Evolved by Species of Pinaceae"	6/1/68 - 5/31/71	7,648

*Supported by FY 1969 funds.

C. ECONOMIC AND SOCIAL STUDIES AND REGIONAL PLANNING

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
1. Economic Studies			
AP 00512-02	Henry C. Wohlers Drexel University Philadelphia, Pennsylvania 19104 "Cost of Air Pollution Reduction in Delaware Valley"	6/1/68 - 8/31/70	None*
AP 00556-03S1	Benjamin H. Stevens Regional Science Research Institute Philadelphia, Pennsylvania 19101 "Effects of Air Pollution on Optimal Urban Form"	2/1/67 - 9/30/70	756
AP 00767-02	Sidney Goren University of California Los Angeles, California 90024 "Stimulate Community Cooperation in Air Conservation"	4/1/68 - 3/31/70	None*
AP 00792-01	Harvey M. Adelman University of Southern California Los Angeles, California 90012 "Exploration of Air Pollution and City Systems"	4/1/68 - 11/30/69	None**
2. Economic Effects			
AP 00486-03S2	Hans H. G. Jellinek Clarkson College of Technology Potsdam, New York 13676 "The Effects of Air Pollutants on Polymers"	1/1/66 - 3/31/70	None*

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Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00499-03S1	Raymond M. Manganelli Rutgers, The State University New Brunswick, New Jersey 08903 "The Fate of Air Pollutants SO_2, NO_2 and Textile Fibers"	3/1/67 - 2/28/70	$ 1,555
AP 00542-04	S. Haig Zeronian University of California Davis, California 95616 "Effect of Air Pollutants on Textile Fibers"	6/1/67 - 5/31/71	26,366

3. Social Studies and Urban and Regional Planning

AP 00842-01	Walter Isard Harvard University Cambridge, Massachusetts 02138 "Air Quality Management for a Regional System"	5/1/69 - 8/31/72	None*
AP 00902-01	Frank A. Tillman Kansas State University Manhattan, Kansas 66502 "Optimal Control of Pollution Distribution"	6/1/70 - 11/30/71	13,480
AP 00982-01	Leanne G. Rivlin City University of New York New York, New York 10036 "The Effects of Air Pollution on Interperscnal Behavior"	4/1/70 - 9/30/71	8,578
AP 01165-01	Michael E. Eckstein Southern Connecticut State College New Haven, Connecticut 06515 "The Organizational Factors in Air Pollution Control"	9/1/69 - 8/31/70	19,370

*Supported by FY 1969 funds.

D. PHYSICO-CHEMICAL INVESTIGATIONS

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
1. On Gases			
AP 00018-10	I. C. Hisatsune Pennsylvania State University University Park, Pennsylvania 16802 "Structures of Some Oxides of Nitrogen"	10/1/66 - 9/30/71	$19,016
AP 00104-11	Harold S. Johnston University of California Berkeley, California 94720 "Photochemistry of Substances Present in Urban Air"	5/1/68 - 4/30/73	37,917
AP 00109-11	James N. Pitts, Jr. University of California Riverside, California 92502 "Mechanisms of Photochemical Reactions in Urban Air"	12/1/68 - 11/30/71	91,258
AP 00131-10	Jack G. Calvert Ohio State University Research Foundation Columbus, Ohio 43210 "Mechanisms of Photochemically Initiated Oxidations"	1/1/68 - 12/31/72	90,825
AP 00265-06S1	William H. Corcoran California Institute of Technology Pasadena, California 91109 "Microkinetics Studies in Reactions of Nitric Oxide"	5/1/66 - 8/31/70	None*
AP 00289-06	Edward A. Schuck University of California Riverside, California 92502 "Photochemistry of Polluted Atmospheres"	4/1/66 - 8/31/69	None*

*Supported by FY 1969 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00353-06	Sidney W. Benson Stanford Research Institute Menlo Park, California 94025 "Kinetics and Thermochemistry of Free Radicals"	11/1/67 - 10/31/72	$97,759
AP 00357-06	Paul Urone University of Colorado Boulder, Colorado 80302 "Tracer Studies in Air Pollution: I. Sulfur Dioxide"	10/1/68 - 9/30/71	22,100
AP 00390-06	Garnett R. McMillan Case Western Reserve University Cleveland, Ohio 44106 "Elementary Reaction in Polluted Atmospheres"	12/1/67 - 11/30/70	11,784
AP 00391-05	D. W. Setser Kansas State University Manhattan, Kansas 66502 "Kinetic Behavior of Inorganic Radicals"	9/1/65 - 8/31/70	41,502
AP 00462-05	Sigmund Jaffe California State College Los Angeles, California 90032 "Photolytic Oxidation in the Presence of NO_2"	1/1/70 - 12/31/72	21,645*
AP 00502-04A1	Richard B. Timmons The Catholic University Washington, D. C. 20017 "Studies of O Atom Reactions Atmospheric Importance"	2/1/70 - 1/31/73	14,958
AP 00505-05	Paul R. Story University of Georgia Athens, Georgia 30601 "Mechanisms of Ozonolysis"	5/1/69 - 4/30/74	30,882
AP 00558-03	Robert C. Robbins Stanford Research Institute Menlo Park, California 94025 "CO Content of Glacial Ice and the Natural Atmosphere"	4/1/69 - 3/31/71	None**

*Includes "04S1" supplement - $1,238.
**Supported by FY 1969 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00572-02	Leonard Dauerman New York University New York, New York 10003 "Nitrogen Trioxide from Nitrates"	2/1/67 - 1/31/70	None*
AP 00580-04	Paul R. Story University of Georgia Athens, Georgia 30601 "Chemistry and Properties of Ozonides"	5/1/67 - 4/30/71	22,953
AP 00595-02	Hanns O. von Weyssenhoff Illinois Institute of Technology Chicago, Illinois 60616 "Photolysis and Fluorescence of the Oxides of Nitrogen"	9/1/67 - 5/31/70	None**
AP 00596-03	Alfred Hassner University of Colorado Boulder, Colorado 80302 "The Chemistry and Photochemistry of Air Pollutants"	3/1/68 - 2/28/71	24,503
AP 00633-02	Simon H. Bauer Cornell University Ithaca, New York 14850 "Reactions of SO_2 with Hydrocarbons CO and H_2"	10/1/68 - 9/30/72	54,716
AP 00638-02S2	William A. Guillory Howard University Washington, D. C. 20001 "Matrix-Isolation of Nitrogen Oxides"	11/1/68 - 4/30/70	3,500
AP 00639-02	C. Beat Meyer University of Washington Seattle, Washington 98105 "Chemistry of Sulfur in Hot Combustion Gases"	2/1/69 - 1/31/72	56,007
AP 00641-02	Lowell G. Wayne University of Southern California Los Angeles, California 90033 "Analog Study of Photochemical Smog Reaction Kinetics"	9/1/67 - 8/31/69	None**

*Supported by FY 1968 funds.
**Supported by FY 1969 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00675-03	Kent R. Wilson University of California, San Diego La Jolla, California 92307 "Primary Products of Photo Dissociation"	4/1/68 - 3/31/71	$62,987
AP 00681-03	Christopher S. Foote University of California Los Angeles, California 90024 "Mechanisms of Photooxidation"	3/1/68 - 2/28/73	32,397
AP 00698-03	Sidney W. Benson Stanford Research Institute Menlo Park, California 94025 "Activation Energies for Radical and Molecular Reactions"	1/1/68 - 2/28/71	29,861
AP 00718-03	Julian P. Heicklen Pennsylvania State University University Park, Pennsylvania 16802 "Photochemistry of Heterocyclic Molecules"	6/1/68 - 5/31/71	31,541
AP 00741-02	Clyde Orr, Jr. Georgia Institute of Technology Atlanta, Georgia 30332 "Atmospheric Contamination and Tribo Electrification"	6/1/68 - 5/31/70	None*
AP 00742-03	Kinsell L. Coulson University of California Davis, California 95616 "Ultraviolet Radiation in a Polluted Atmosphere"	6/1/68 - 5/31/71	7,997
AP 00768-02	Zdenek Sekera University of California Los Angeles, California 90024 "Polarization of EM Radiation in a Polluted Atmosphere"	6/1/68 - 5/31/71	13,747
AP 00771-03	James N. Pitts University of California Riverside, California 92502 "Singlet Molecular Oxygen: Oxidation in Polluted Air"	6/1/68 - 5/31/71	42,341

*Supported by FY 1969 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00794-02	James. P. Collman Stanford University Stanford, California 94305 "Catalysis for Autoxidation of Toxic Gases"	6/1/69 - 5/31/71	$57,962*
AP 00813-01	Robert G. Squires Purdue University Lafayette, Indiana 47907 "Oxidation Mechanisms on Supported Chromia Catalysts"	6/1/70 - 5/31/73	35,422
AP 00818-02	George D. Blyholder University of Arkansas Fayetteville, Arkansas 72701 "Heterogeneous Reactions in Air Pollution"	5/1/69 - 4/30/72	29,927
AP 00820-01A1	Benjamin A. De Graff University of Virginia Charlottesville, Virginia 22901 "The Reaction of O (D) Atoms with Water Vapour"	5/1/70 - 4/30/71	12,470
AP 00827-01	Jack L. Lambert Kansas State University Manhattan, Kansas 66502 "New Analytical Methods for Sulfur Dioxide"	6/1/70 - 5/31/72	11,059
AP 00828-02	William E. Wilson, Jr. Battelle Memorial Institute Columbus, Ohio 43201 "Elementary Reactions in Photochemical Smog"	2/1/69 - 5/31/72	46,845
AP 00830-02	Edgar R. Stephens University of California Riverside, California 92502 "Photochemical Reactions in a Flow Reactor"	2/1/69 - 1/31/72	36,036
AP 00925-02	Robert W. Murray University of Missouri Columbia, Missouri 65201 "Chemistry of Singlet Oxygen from Ozone Sources"	2/1/69 - 1/31/72	30,873

*Includes "01S1" supplement - $23,964.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00931-02	Garnett R. McMillan Case Western Reserve University Cleveland, Ohio 44106 "Photochemical Gas-Particle Interactions"	2/1/69 - 1/31/72	$24,074
AP 01044-01	Julian P. Heicklen Pennsylvania State University University Park, Pennsylvania 16802 "Conversion of NO to NO_2 in Polluted Atmospheres"	4/1/70 - 3/31/73	40,378
AP 01070-01	Elmar R. Altwicker Rensselaer Polytechnic Institute Troy, New York 12181 "Measurement of Ozone Concentrations in the Atmosphere"	5/1/70 - 10/31/71	8,947
AP 01078-01	Edel Wasserman Rutgers, The State University New Brunswick, New Jersey 08903 "E P R Study of Photoreactions in the Atmosphere"	4/1/70 - 3/31/73	28,526
AP 01096-01	Edward G. Janzen University of Georgia Athens, Georgia 30601 "Photochemical Studies by ESR Spin Trapping Techniques"	5/1/70 - 4/30/73	19,008
AP 01127-01	Keiji Morokuma University of Rochester Rochester, New York 14627 "Aspects of Chemical Reactions of Air Pollutants"	5/1/70 - 4/30/73	27,169
AP 01142-01	Melvin J. Goldstein Cornell University Ithaca, New York 14850 "Peracetoxyl Recombination"	6/1/70 - 5/31/73	16,195
AP 01150-01	William A. Guillory Drexel University Philadelphia, Pennsylvania 19104 "Matrix-Isolated Spectra of Nitrogen Oxides"	5/1/70 - 4/30/71	42,163

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 01181-01	Jack H. Lunsford Texas A&M University College Station, Texas 77843 "Structure and Reactivity of Adsorbed Oxides of Sulfur"	5/1/70 - 4/30/73	$16,221
2. On Aerosols and Particulates			
AP 00048-09	Milton Kerker Clarkson College of Technology Potsdam, New York 13676 "Physical Chemical Studies of Aerosols"	4/1/68 - 3/31/73	34,011
AP 00336-07	R. J. Charlson University of Washington Seattle, Washington 98105 "Influence of Aerosol Characteristics on Visibility"	2/1/68 - 1/31/71	33,203
AP 00421-05	E. J. Crosby University of Wisconsin Madison, Wisconsin 53706 "Coalescence of Drops in a Gaseous Medium"	9/1/68 - 8/31/71	27,930
AP 00431-05	Morton Corn University of Pittsburgh Pittsburgh, Pennsylvania 15213 "The Shape of Atmospheric Particles"	6/1/67 - 5/31/70	None*
AP 00453-03	Harold J. Paulus University of Minnesota Minneapolis, Minnesota 55455 "Urban Aerosol: Count Size Related to Meteorologic Data"	6/1/66 - 11/30/69	None**
AP 00479-05	James R. Brock University of Texas Austin, Texas 78712 "Dynamical Theories of Knudsen Aerosols"	2/1/69 - 1/31/72	14,439
AP 00503-02S1	James A. Gieseke Battelle Memorial Institute Columbus, Ohio 43201 "Thermal Forces on Aerosol Particles"	6/1/67 - 11/30/69	None*

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Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00511-04	Charles D. Hendricks University of Illinois Urbana, Illinois 61801 "Uniform Particle Generation and Application"	5/1/68 - 12/31/70	$34,945
AP 00543-03S2	James P. Lodge* Atmospheric Research Group Altadena, California 91001 "Formation and Decay of Atmospheric Aerosols"	1/1/67 - 4/30/70	36,485
AP 00585-02S1	John W. Winchester University of Michigan Ann Arbor, Michigan 48104 "Composition of Lead Halide Pollution Aerosols"	6/1/67 - 5/31/70	None**
AP 00670-03	Simon L. Goren University of California Berkeley, California 94720 "Aerosol Filtration in Slip and Transition Flow"	6/1/68 - 5/31/71	374
AP 00680-02	Jack McKee California Institute of Technology Pasadena, California 91109 "Bioengineering Aspects of Air Pollution"	1/1/68 - 3/31/73	43,525
AP 00743-03	Milton Kerker Clarkson College of Technology Potsdam, New York 13676 "Multiple Light Scattering of Polluted Atmospheres"	6/1/68 - 5/31/71	20,462
AP 00748-01	Wallace B. Murcray University of Alaska College, Alaska 99701 "Effects of Ice Crystals on Radiative Cooling Rates"	5/1/69 - 4/30/70	None**
AP 00758-03	Frank C. Goodrich Clarkson College of Technology Potsdam, New York 13676 "Kinetics of Particle Growth"	6/1/68 - 5/31/71	17,772

*Formerly Alexander Goetz (deceased)
**Supported by FY 1969 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00800-02	Myron L. Corrin Colorado State University Fort Collins, Colorado 80521 "Properties of Particulate Pollutants"	5/1/69 - 4/30/72	$24,410
AP 00839-01S1	Kenneth T. Whitby University of Minnesota Minneapolis, Minnesota 55455 "Aerosol Measurements in Los Angeles Smog"	2/1/69 - 8/31/70	4,852
AP 00880-01	Gerald van Belle Florida State University Tallahassee, Florida 32306 "Statistical Methods in Aerosol Studies"	6/1/70 - 11/30/71	9,454
AP 00908-02	John O. Frohliger University of Pittsburgh Pittsburgh, Pennsylvania 15213 "Analysis of Chemical Compounds in an Urban Aerosol"	6/1/69 - 5/31/72	58,252*
AP 00910-02	Gerhard W. Israel University of Maryland College Park, Maryland 20740 "Investigations of Beams of Submicron Particles"	2/1/69 - 1/31/71	7,749
AP 00944-01	Benjamin R. Payne University of Nevada Reno, Nevada 89507 "The Orovada, Nevada, Basin Environmental Study"	6/1/70 - 5/31/72	11,694
AP 01161-01	Emil Pfender University of Minnesota Minneapolis, Minnesota 55455 "Aerosol Generation with High Intensity Arcs"	4/1/70 - 3/31/72	19,013
3. On Metals			
AP 00875-05	Tsaihwa J. Chow Scripps Institute of Oceanography La Jolla, California 92037 "Lead Isotopic Chemistry for Pollution Research"	1/1/69 - 12/31/71	34,030

*Includes "01S1" supplement - $24,153.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00971-01	James C. Fanning Clemson University Clemson, South Carolina 29631 "The Reaction of Metalloporphyrins with Air Pollutants"	5/1/70 - 10/31/71	$ 8,553
AP 01085-01	Warren A. McAllister East Carolina University Greenville, North Carolina 27834 "Transition Metal Chemistry of Two Common Air Pollutants"	5/1/70 - 10/31/71	8,580
AP 01214-01	Robert A. Duce University of Rhode Island Kingston, Rhode Island 02881 "Continental Trace Element Air Pollution in Hawaii"	3/1/70 - 2/28/71	40,642

E. DEVELOPMENT OF ANALYTIC METHODS AND EQUIPMENT

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
1. For Gases			
AP 00308-07	Albert Zlatkis University of Houston Houston, Texas 77004 "Ionization Methods of Gas Analysis"	1/1/70 - 12/31/70	$36,853
AP 00432-04	Francis J. Norton State University of New York Albany, New York 12203 "Permeation Rates of Tracer Gases through Polymers"	5/1/69 - 4/30/72	None*
AP 00485-04	Alfred W. von Smolinski University of Illinois Chicago, Illinois 60680 "Analytical Studies in Air Pollution"	12/1/65 - 11/30/69	None*
AP 00501-03	Norman M. Trieff Drexel University Philadelphia, Pennsylvania 19104 "Study of Odor Components of Industrial Exhaust"	9/1/66 - 8/31/69	None*
AP 00516-02S1	Solomon Zaromb Zaromb Research Foundation Passaic, New Jersey 07055 "Remote Sensing of Invisible Air Pollutants"	3/1/68 - 4/30/70	9,329
AP 00578-03	William H. Prengle, Jr. University of Houston Houston, Texas 77004 "Pollutants in Chimney Stack Plumes"	6/1/68 - 5/31/71	19,192
AP 00591-03	David T. Williams University of Florida Gainesville, Florida 32601 "Portable Spectrometric Analyzer for Air Pollutants"	6/1/67 - 5/31/70	None*

*Supported by FY 1969 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00640-02	Martin V. Sussman Tufts University Medford, Massachusetts 02155 "Continuous Chromatographic Monitoring of Gas Streams"	10/1/68 - 5/31/71	$26,067
AP 00812-02	Bernard E. Saltzman University of Cincinnati Cincinnati, Ohio 45219 "Development of Air Sampling Methodology"	2/1/69 - 1/31/72	50,932
AP 00814-02	Harry P. Burchfield Gulf South Research Institute Baton Rouge, Louisiana 70560 "GLC Detector for Carcinogenic Hydrocarbons"	5/1/69 - 4/30/72	41,301
AP 00816-02	Clyde Orr, Jr. Georgia Institute of Technology Atlanta, Georgia 30332 "Homogeneous Nucleation in Contaminated Atmospheres"	4/1/69 - 3/31/71	30,070
AP 00834-02	Eldon L. Knuth University of California Los Angeles, California 90024 "Molecular-Beam Sampling from Cycling-Pressure Sources"	2/1/69 - 1/31/71	41,080
AP 00859-01S1	Donald Yankovich Massachusetts Institute of Technology Cambridge, Massachusetts 02139 "Study of Computer-Controlled Electron Microscopy"	6/1/68 - 4/30/70	None*
AP 00890-01	Stanley E. Manahan University of Missouri Columbia, Missouri 65201 "A New Approach to Automated Sulfur Dioxide Analysis"	2/1/69 - 7/31/70	None*
AP 00929-01	Jacob Becher Old Dominion College Norfolk, Virginia 23508 "Detection of Small Amounts of SO_2 in Atmosphere"	6/1/70 - 11/30/71	10,061

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Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00946-01	Yi H. Ma Worcester Polytechnic Institute Worcester, Massachusetts 01609 "Gas Chromatography and Air Pollution Control"	6/1/70 - 11/30/71	$ 9,678
AP 00974-01	Donald F. Adams Washington State University Pullman, Washington 99163 "Development of a Fluoride-Specific Microelectrode"	5/1/69 - 10/31/70	None*
AP 00994-01	Robert C. Harriss Florida State University Tallahassee, Florida 32306 "Atmospheric Chemistry of Boron"	5/1/70 - 10/31/71	7,302
AP 01004-02	Leonard B. Sand Worcester Polytechnic Institute Worcester, Massachusetts 01609 "New Inorganic Materials for Sulfur Oxide Removal"	5/1/69 - 4/30/72	19,635
AP 01232-01	Reinhold A. Rasmussen Washington State University Pullman, Washington 99163 "Evaluation of a New Cryogenic Sampler for Field Use"	6/1/70 - 5/31/72	29,222
AP 01254-01	Kyle D. Bayes University of California Los Angeles, California 90024 "A New Instrument for Kinetic Studies of Air Pollution"	6/1/70 - 5/31/73	30,858
2. For Aerosols and Particulates			
AP 00136-10	Kenneth T. Whitby University of Minnesota Minneapolis, Minnesota 55455 "Generation and Decay of Small Ions"	5/1/70 - 4/30/74	37,158

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Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00367-05	Frank T. Gucker Indiana University Foundation Bloomington, Indiana 47401 "Physical Chemistry of Aerosols"	10/1/68 - 9/30/71	$28,277
AP 00370-05	Charles W. Gruber Cincinnati Bureau of Air Pollution Control Cincinnati, Ohio 45214 "Particulate Sampling by Adhesive-Coated Materials"	10/1/67 - 9/30/69	None*
AP 00372-04	Harry U. Rhoads Saint Louis University Saint Louis, Missouri 63103 "Analysis of Atmospheric Dust by Electron Optics"	2/1/69 - 1/31/70	None*
AP 00468-05	Othmar Preining University of Vienna Vienna, Austria "Studies on Aerosols of Sizes Down to 0.05 Micron"	4/1/69 - 3/31/72	5,057
AP 00480-05	Kenneth T. Whitby University of Minnesota Minneapolis, Minnesota 55455 "Study of Atomizer Aerosol Generators"	5/1/68 - 4/30/71	20,273
AP 00728-03	Peter K. Mueller California State Department of Public Health Berkeley, California 94704 "Characterizing Asbestos-Bearing Aerosols"	6/1/68 - 5/31/71	54,084**
3. For Metals			
AP 00128-08S1	Philip W. West Louisiana State University Baton Rouge, Louisiana 70803 "Atomic Absorption Spectroscopy of Trace Pollutants"	1/1/67 - 12/31/70	15,033

*Supported by FY 1969 funds.
**Includes "02S1" supplement - $19,859.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00444-04	Carl E. Moore Loyola University Chicago, Illinois 60626 "Study of Air Pollutants by Absorption Spectroscopy"	4/1/68 - 3/31/71	$ None*
AP 00519-03	Roy G. Post University of Arizona Tucson, Arizona 85721 "Activation Analysis of Atmospheric Particulates"	9/1/66 - 1/31/70	None*
AP 00900-01	Edward B. Buchanan, Jr. University of Iowa Iowa City, Iowa 52240 "Spreading of Lead in Rural Areas"	6/1/70 - 11/30/71	13,578
AP 00942-01	Volker A. Mohnen State University of New York Albany, New York 12224 "Conversion of Gas Molecules into Detectable Particles"	6/1/70 - 5/31/72	26,998
AP 01263-01	Robert W. Detenbeck University of Vermont Burlington, Vermont 05401 "Automated Microparticle Shape Discrimination"	6/1/70 - 11/30/71	9,965

*Supported by FY 1969 funds.

F. METEOROLOGY

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
1. Basic Studies			
AP 00449-03	Takeshi Ohtake University of Alaska College, Alaska 99735 "Investigation of Ice Fog Problems"	10/1/65 - 12/31/69	None*
AP 00601-03S1	Dave Fultz University of Chicago Chicago, Illinois 60637 "Atmospheric Diffusion Model Experiments, Feasibility"	5/1/67 - 4/30/70	1,826
AP 00609-04	Herman Newstein Drexel University Philadelphia, Pennsylvania 19104 "Atmospheric Diffusion of Radon"	6/1/67 - 5/31/71	42,200
AP 00627-03	Donald C. Grey University of Utah Salt Lake City, Utah 84112 "Atmospheric Fluids Provenance Using Stable Isotopes"	1/1/68 - 5/31/71	51,098
AP 00661-01	Sandor A. Veress University of Washington Seattle, Washington 98105 "Study of Three-Dimensional Extension of Polluted Air"	6/1/68 - 4/30/70	None**
AP 00672-03	Edward D. Goldberg Scripps Institute of Oceanography La Jolla, California 92307 "Air Transport of Pollutants to the Marine Environment"	3/1/68 - 2/28/71	28,797***

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***Includes "02S1" supplement - $3,577.

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Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00678-03	James A. Fay Massachusetts Institute of Technology Cambridge, Massachusetts 02139 "Dispersion of Air Pollutants"	6/1/68 - 5/31/71	$22,511
AP 00769-01	James Halitsky New York University New York, New York 10003 "Effect of Turbulence on Gas Diffusion Around Obstacles"	4/1/68 - 7/31/69	None*
AP 00940-01	John E. Geisler University of Miami Coral Gables, Florida 33124 "A Numerical Model of the Sea-Breeze Circulation"	6/1/70 - 5/31/71	11,387
AP 01013-01	James R. Mahoney Harvard School of Public Health Boston, Massachusetts 02115 "Numerical Study of Urban Scale Atmospheric Transport"	9/1/69 - 8/31/71	34,663
AP 01082-01	William J. Moroz Pennsylvania State University University Park, Pennsylvania 16802 "Modelling Pollutant Concentrations"	4/1/70 - 3/31/72	45,477
AP 01126-01	S. K. Kao University of Utah Salt Lake City, Utah 84112 "Air Pollution in Topographical Depressions"	5/1/70 - 4/30/72	39,160
AP 01144-01	Victor W. Nee University of Notre Dame Notre Dame, Indiana 46556 "Diffusion in Turbulent Surface Layer"	6/1/70 - 7/31/71	11,387
AP 01174-01	Donald L. Veal University of Wyoming Laramie, Wyoming 82070 "Inadvertent Weather Modification by Urban Pollution"	6/1/70 - 5/31/72	65,254

*Supported by FY 1968 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 01186-01	Robert N. Meroney Colorado State University Fort Collins, Colorado 80521 "The Behavior of Negatively Buoyant Gas Plumes"	5/1/70 - 4/30/72	$17,308
AP 01200-01	Morris Neiburger University of California Los Angeles, California 90024 "Diffusion and Disposal of Air Pollution"	6/1/70 - 5/31/73	25,302
AP 01201-01	Alan L. Cole Northern Illinois University Dekalb, Illinois 60115 "Design of a Great Lakes Region Air Pollution Model"	10/1/69 - 9/30/70	41,377
AP 01240-01	Leonard O. Myrup University of California Davis, California 95616 "Numerical Model of the Urban Atmosphere"	6/1/70 - 5/31/71	26,999

2. Air Pollution Forecasting

AP 00611-03	John F. Griffiths Texas A & M University College Station, Texas 77843 "A Time and Space Study of Atmospheric Pollutants"	6/1/67 - 5/31/70	None*
AP 00895-01	E. Stanley Lee Kansas State University Manhattan, Kansas 66502 "Adaptive Modeling for Air Pollution Control"	2/1/69 - 12/31/70	None*

3. Biometeorology

AP 00080-14	C. L. Kramer Kansas State University Manhattan, Kansas 66502 "Diurnal Investigations of Airborne Fungi"	4/1/68 - 3/31/71	16,972

*Supported by FY 1969 funds.

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00081-12	Eugene C. Ogden State University of New York Albany, New York 12224 "Travels of Airborne Pollen"	10/1/65 - 9/30/70	$41,972
AP 00456-04	Murray F. Buell Rutgers, The State University New Brunswick, New Jersey 08903 "Changing Vegetation and Atmospheric Pollen"	2/1/70 - 1/31/72	17,225
AP 00553-03	Ivan W. Buddenhagen University of Hawaii Honolulu, Hawaii 96822 "Air Spora in Hawaii"	2/1/67 - 4/30/72	23,370
AP 00581-03	William E. Booth Montana State University Bozeman, Montana 59715 "Aerobiological Survey in the Northern Rockies and Plains"	6/1/67 - 5/31/71	0
AP 00811-01	Patrick Squires University of Nevada Reno, Nevada 89507 "Urban Air Pollution and Climatic Change"	5/1/70 - 4/30/72	90,799

*Includes "02S1" supplement - $2,178.

G. DESCRIPTION AND CONTROL OF AIR POLLUTION SOURCES

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
1. Combustion			
AP 00039-06	Jimmie E. Quon Northwestern University Evanston, Illinois 60201 "Significance of Combustion Nuclei to Air Pollution"	10/1/66 - 11/30/70	$ None*
AP 00397-04S2	Robert H. Essenhigh The Pennsylvania State University University Park, Pennsylvania 16802 "Incinerator Processes and Emissions"	5/1/65 - 12/31/70	14,856
AP 00464-05	Arthur Levy Battelle Memorial Institute Columbus, Ohio 43201 "Kinetics of Sulfur-Oxide Formation in Flames"	6/1/70 - 5/31/71	43,697
AP 00504-03	Richard W. Boubel Oregon State University Corvallis, Oregon 97331 "Air Pollution from Agricultural and Forestry Burning"	2/1/67 - 1/31/70	None*
AP 00562-04	Donald F. Adams Washington State University Pullman, Washington 99163 "Composition and Distribution of Forest Fire Smoke"	2/1/67 - 1/31/71	31,382
AP 00568-04	Ellis F. Darley University of California Riverside, California 92502 "Characterization of Smoke from Cellulosic Fuels"	2/1/70 - 1/31/73	30,564

*Supported by FY 1969 Funds

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00643-03	Robert J. Heinsohn Pennsylvania State University University Park, Pennsylvania 16802 "Use of Electric Fields in Combustion"	3/1/68 - 2/28/71	$17,462
AP 00724-02	Philip W. West Louisiana State University Baton Rouge, Louisiana 70803 "Selenium and Its Significance as an Air Pollutant"	9/1/69 - 8/31/70	40,987
AP 00829-01A1	Ellis F. Darley University of California Riverside, California 92502 "Air Pollution from Forest and Agricultural Burning"	4/1/70 - 3/31/73	40,043
AP 00851-01	Walter J. Weber University of Michigan Ann Arbor, Michigan 48104 "Scrubbing of Refuse Incinerator Emission Gases"	6/1/70 - 5/31/73	30,092
AP 01137-01	Richard C. Corlett University of Washington Seattle, Washington 98105 "Flame Retardants and Air Pollution from Slash Burning"	6/1/70 - 5/31/71	30,261
AP 01151-01	Jack P. Holman Southern Methodist University Dallas, Texas 75222 "Air Pollution Control Fluidized Vortex Incineration"	5/1/70 - 4/30/73	27,724
AP 01228-01	James C. Keck Massachusetts Institute of Technology Cambridge, Massachusetts 02139 "Kinetics of NO and CO Formation in Combustion Gases"	6/1/70 - 5/31/72	46,694

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
2. Vehicle Emissions			
AP 00275-07	Bernard D. Tebbens University of California Berkeley, California 94720 "UCB-ENG-2953--Aromatic By-Products of Combustion"	9/1/66 - 8/31/71	$52,561
AP 00323-06	Ronald Long University of Birmingham Edgbaston, Birmingham, 15 England "Reduction of Polycyclic Aromatic Hydrocarbons"	1/1/68 - 12/31/70	7,675
AP 00365-06	Jay A. Bolt University of Michigan Ann Arbor, Michigan 48104 "Carburetors - Reduction of Engine Exhaust Emissions"	9/1/67 - 8/31/71	55,629
AP 00385-05	Ernest S. Starkman University of California Berkeley, California 94720 "UCB-ENG-2933--Combustion Gas Composition"	8/1/68 - 9/30/72	140,229
AP 00560-04	Wolfgang E. Meyer Pennsylvania State University University Park, Pennsylvania 16802 "Engine Emission Reduction by Combustion Control"	2/1/70 - 1/31/71	50,238
AP 00576-04	Richard A. Matula Drexel University Philadelphia, Pennsylvania 19104 "Diesel Fuel Combustion Chemistry as Related to Odor"	6/1/70 - 5/31/71	29,863
AP 00582-04	Henry K. Newhall University of Wisconsin Madison, Wisconsin 53706 "Combustion Process Analysis"	6/1/70 - 5/31/73	36,316
AP 00763-03	Abraham Hertzberg University of Washington Seattle, Washington 98105 "Kinetics of Nitrogen-Oxide Automotive Pollution"	6/1/68 - 5/31/71	47,877

Grant Number	Name, Institution, Project Title	Project Period	Fiscal Year 70 Support
AP 00835-02	Jay A. Bolt University of Michigan Ann Arbor, Michigan 48104 "Fuel Injection System Analysis: Diesel Smoke Reduction"	2/1/69 - 1/31/73	$29,319
AP 00847-01	Robert F. McAlevy, III Stevens Institute of Technology Hoboken, New Jersey 07030 "Nitrogen-Oxide Kinetics in Auto Combustion Products"	9/1/69 - 8/31/72	48,044
AP 00858-02	Richard A. Matula Drexel University Philadelphia, Pennsylvania 19104 "Kinetics of Nitric Oxide at High Temperatures"	4/1/69 - 3/31/72	35,916
AP 00871-01	Wallace Chinitz Cooper Union, Advancement of Science and Art New York, New York 10003 "Non-Equilibrium Effects in Internal Combustion Engine"	6/1/70 - 11/30/71	9,825
AP 00906-02	Richard L. Peskin Rutgers, The State University New Brunswick, New Jersey 08903 "Liquid Fuel Ignition and Combustion"	2/1/69 - 1/31/72	28,068
AP 01196-01	Harry W. Edwards Colorado State University Fort Collins, Colorado 80521 "Reduction of Nitric Oxide by Graphite"	5/1/70 - 4/30/72	19,724
3. Industrial Emissions			
AP 00301-06	Jerome F. Thomas University of California Berkeley, California 94720 "Malodorous Products of Kraft Black Liquor Combustion"	9/1/66 - 8/31/70	None*
AP 00363-06	Kyosti V. Sarkanen University of Washington Seattle, Washington 98105 "Odor Formation in Alkaline Pulping"	1/1/68 - 12/31/70	43,909**

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**Includes "05S1" supplement - $117.

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AP 00383-06	Irwin B. Douglass University of Maine Orono, Maine 04473 "Chemical Aspects of Air Pollution from Kraft Pulping"	10/1/69 - 9/30/70	$28,180
AP 00475-03	Michael J. Schaer Montana State University Bozeman, Montana 59715 "Pollution Abatement by Process Gas Chromatography"	10/1/68 - 1/31/72	None*
AP 00589-02S1	Ewin A. Eads Lamar State College of Technology Beaumont, Texas 77705 "Attempts to Control Kraft Mill Odor"	11/1/67 - 10/31/70	11,831
AP 00612-02	William J. Nolan University of Florida Gainesville, Florida 32601 "Pre-Pulping Chip Extraction to Reduce Environmental Pollution"	6/1/67 - 10/15/69	None**
AP 00791-02	W. Leigh Short University of Massachusetts Amherst, Massachusetts 01002 "SO_2 and NO_x Removals from Stack Gases by CO"	2/1/69 - 1/31/72	23,095
AP 00961-01	Francis E. Murray University of British Columbia Vancouver, British Columbia, Canada "Gas Phase Kinetics of Kraft Mill Pollutants"	12/1/68 - 11/30/69	None*

4. Development of Control Principles and Devices

AP 00246-06	Herman L. Shulman Clarkson College of Technology Potsdam, New York 13676 "Kinetics of Adsorption by Molecular Sieves"	8/1/66 - 1/31/70	None*

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AP 00387-06	Eugene Petersen University of California Berkeley, California 94720 "Catalytic Reduction of Oxides of Nitrogen"	12/1/67 - 11/30/70	$16,173
AP 00388-05	Max S. Peters University of Colorado Boulder, Colorado 80302 "Catalytic Mechanisms for Nitrogen Oxides Reduction"	1/1/65 - 11/30/70	None*
AP 00406-05	Philip L. Walker, Jr. Pennsylvania State University University Park, Pennsylvania 16802 "Interaction of Flue Gases with Carbon Surfaces"	12/1/68 - 11/30/70	16,683
AP 00422-02	James L. McAtee, Jr. Baylor University Waco, Texas 76703 "Crystal Structure Determination of Stable Ozonides"	10/1/66 - 9/30/69	None*
AP 00498-05	Imre Zwiebel Worcester Polytechnic Institute Worcester, Massachusetts 01609 "Adsorption Rate Studies Air Pollution"	6/1/69 - 5/31/72	30,410
AP 00513-03	Charles N. Satterfield Massachusetts Institute of Technology Cambridge, Massachuse ts 12139 "Hetero-Homogeneous Catalysis of Air Pollutants"	6/1/66 - 5/31/70	None**
AP 00517-05	Harold J. Gluskoter University of Illinois Urbana, Illinois 61801 "Mineral Matter in Coal"	6/1/69 - 5/31/72	30,450
AP 00541-03	Shao L. Soo University of Illinois Urbana, Illinois 61801 "Boundary Layer Flow in Electrostatic Precipitators"	3/1/67 - 2/28/70	None*

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AP 00552-03S1	Alvin W. Czanderna Clarkson College of Technology Potsdam, New York 13676 "The Effect of Air Pollutants on Solid Surfaces"	2/1/67 - 4/30/71	$ 5,732
AP 00574-03	Lauri Vaska Clarkson College of Technology Potsdam, New York 13676 "Reversible Metal Complexes with Air Pollutants"	5/1/67 - 7/31/70	37,937
AP 00669-04	Manfred J. D. Low New York University New York, New York 10003 "Fundamentals of Air Cleaning by Sorption Processes"	6/1/68 - 5/31/72	58,411
AP 00692-02	Arthur M. Squires The City College New York, New York 10031 "Filtration of Aerosols by Granular Beds"	6/1/68 - 5/31/71	37,123
AP 00717-03	John Happel New York University Bronx, New York 10453 "Sulfur Dioxide Oxidation"	1/1/68 - 5/31/71	34,390
AP 00723-03	Dilip Mehta University of California Riverside, California 92502 "Basic Study of Air Pollution Control Wet Scrubbers"	9/1/68 - 12/31/70	18,868
AP 00738-02	Robert W. Coughlin Lehigh University Bethlehem, Pennsylvania 18015 "Regeneration of Carbon Adsorbents for SO_2"	6/1/68 - 5/31/71	30,377
AP 00833-02	Herbert L. Toor Carnegie-Mellon University Pittsburgh, Pennsylvania 15213 "SO_2 Sorption by and Removal from Polymeric Materials"	2/1/69 - 1/31/72	13,176

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AP 00866-01A1	James W. Robinson Louisiana State University Baton Rouge, Louisiana 70803 "The Direct and Continuous Determination of Metals in Air"	4/1/70 - 3/31/73	$33,073
AP 00876-02	Robert W. Bartlett Stanford University Stanford, California 94305 "Sulfation Kinetics in SO_2 Adsorption from Flue Gas"	5/1/69 - 4/30/72	15,996
AP 00913-02	Ken Nobe University of California Los Angeles, California 90024 "Air Pollution Control by Catalysis"	5/1/69 - 4/30/72	60,881
AP 00945-02	Arthur M. Squires City College Research Foundation New York, New York 10031 "Desulfurization of Fuels by Calcined Dolomite"	4/1/69 - 5/31/72	41,791
AP 00949-01	Alfred J. Engel Pennsylvania State University University Park, Pennsylvania 16802 "Sorption of Gaseous Pollutants by Cycled Operation"	6/1/70 - 11/30/71	10,440
AP 01043-01	Harry R. Allcock Pennsylvania State University University Park, Pennsylvania 16802 "Inclusion Adducts for Air Purification"	5/1/70 - 10/31/71	8,429

H. COMMUNICATION

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AP 00256-06S2	Arthur C. Stern American Public Health Association, Inc. New York, New York 10019 "Manual of Methods for Ambient Air Sampling and Analysis"	6/1/66 - 12/31/70	$95,712
AP 00415-03S1	Murdock Head George Washington University Washington, D. C. 22186 "Audiovisual Methods for Air Pollution Information"	5/1/65 - 4/30/70	0*
AP 00489-05	Frank W. Barton American Medical Association Chicago, Illinois 60610 "Air Pollution Medical Research Conference"	1/1/66 - 12/31/70	7,140
AP 00508-05	Knud W. Leffland University of Southern California Los Angeles, California 90012 "COMEX - Air Pollution Computer Research Project"	6/1/68 - 5/31/71	246,860
AP 00786-02	Michael Y. Nuttonson American Institute of Crop Ecology Silver Spring, Maryland 20910 "USSR Literature on Air Pollution and Related Diseases"	1/1/69 - 12/31/73	30,816
AP 00957-01S1	Gunter Zwieg Syracuse University Research Corporation Syracuse, New York 13210 "Workshop on Air Pollution Research"	4/1/69 - 3/31/70	1,050

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AP 01131-01	Arthur C. Stern University of North Carolina Chapel Hill, North Carolina 27514 "Colloquium of International Air Pollution Scientists"	5/1/70 - 4/30/71	$ 6,531
AP 01202-01	Ronald F. Coburn University of Pennsylvania Philadelphia, Pennsylvania 16802 "Conference of 'Biological Effects of Carbon Monoxide'"	12/1/69 - 11/30/70	23,133

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10. Project/Task/Work Unit No.

11. Contract/Grant No.

12. Sponsoring Agency Name and Address
Same

13. Type of Report & Period Covered

14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstracts

Research grants were awarded in eight major areas: human health effects, agricultural effects, socio-economic and political studies, physico-chemical investigations, development of analytic methods and equipment, meteorology, air pollution source control, and communications. A table summarizes the quantity and amount of the grants in each categorical area. Another table shows the distribution of the quantity, amount, and percent of total funds by subject area within each category. In the main listing, for each subject area within each category the following are listed: each grant number; the grantee's name, institution, and project title; project period; and monetery support. A numerical index of grant numbers refers the reader to the page where each is listed.

17. Key Words and Document Analysis. (a). Descriptors

Air pollution
Grants
Research projects
Expenses
Public health
Respiratory diseases
Atmospheric corrosion
Chemical analysis
Exhaust gases

17b. Identifiers/Open-Ended Terms

Research Grants
Air pollution control
Plant damage

17c. COSATI Field/Group 13/02,

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